All contributions to be sent to the Editor, 19 St. Andrew's Mansions, Dorset Street, W.1. (Telephone, Welbeck 9631.)

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EDITORIAL

THE present state of international politics has, amongst other evils, brought about a number of contributions to various problems dealing with the question of anæsthesia in war-time. Since these may not have reached the eyes of our readers we may justifiably allude to some of the suggestions put forward for practice, and to some of the principles enumerated.

It is rightly pointed out, in the first place, that we can draw on a good deal of experience from the last war, which taught us, for example, the danger of spinal analgesia in patients who are already shocked, and the advantage of non-toxic inhalation anæsthetics for those people as contrasted with ether, but especially with chloroform. The latter was freely used in the early days of the last war, often because it was the only agent familiar to the practitioner responsible for giving the anæsthetic; and the drop of mortality when "gas oxygen" replaced chloroform for patients badly shocked or undergoing severe operations was very noticeable.

In those days there were available neither avertin nor the intravenous barbiturates. The former is unlikely to be of great service in war-time surgery except at the base hospitals. Intravenous methods, on the other hand, appear to be well adapted to the surgery of the forward areas. They do not require heavy or complicated apparatus, and the technique can be quickly learned. It is impossible to know how far the supply of expert anæsthetists would meet the demands of war conditions, but it is not unreasonable to hope that there would be few men in charge of that work who were not already competent in intravenous administration.

We do not know much about the appropriateness of barbiturate injections for the patient in shock who has to undergo operation, but for most of the injuries for which immediate operation is needed in the forward zones this form of anæsthesia would appear likely to be of the greatest service. We notice that the advocate for it includes coramine in the requirements which should be put into the anæsthetist's case. According to the most recent experimental evidence this drug is not of value in barbiturate poisoning, but pictotoxin and cardiazol are.

Needless to say the articles to which we have alluded include some recommending special apparatus designed by the author of the article. Such apparatus it seems to us is unlikely to be of service to the anæsthetist in war-time unless it is of the utmost simplicity and very light. Unless it is simple its use cannot be rapidly mastered by those hitherto unfamiliar with it and, moreover, complicated apparatus is ill-adapted to the working conditions of war areas.

The problem of what is the least harmful anæsthetic for a "gassed" patient is one which would presumably be of great concern in the field-dressing and casualty-clearing stations. Here, too, we have not much previous experience on which to mould our action, but it is obvious that inhalation anæsthetics are likely to be out of the question, and that the intravenous method will prove its value.

The advantages which cyclopropane, with its free oxygen addition, would offer to many of the subjects of war surgery

are obvious, but we cannot agree with the writer who suggests that it should largely be employed in war-time anæsthesia. The requisite apparatus and experienced skilful administrators are only likely to be present together at hospitals far from the fighting area.

ANÆSTHESIA IN GENITO-URINARY SURGERY

By T. A. B. Harris, M.B.

(*The opening paper of a discussion at the British Medical Association's Annual Meeting at Aberdeen.*)

IT may be suggested that anæsthesia in genito-urinary surgery lacks enterprise, but genito-urinary patients belong to a type whose prospect of recovery falls much below the average, and on this account, tried, reliable methods of anæsthesia are retained, to be replaced by new methods only after due consideration of the benefits which are likely to accrue.

By reason of their age, a considerable proportion of these patients have a high blood-pressure, some degree of myocardial change and arterial degeneration, many have emphysema and bronchitis, and when to this is added the chronic interstitial nephritis, the cardio-vascular changes and the chronic sepsis which is so often present in consequence of their genito-urinary condition, they must be classed as bad surgical risks.

The unfavourable clinical condition of the average genito-urinary patient, however, is in a measure compensated for by the importance which genito-urinary surgeons place upon an efficient investigation and an adequate preoperative preparation of the patient, coupled with their willingness to co-operate in the fullest degree with the anæsthetist.

Table I shows the results of 3,035 cases operated on at St. Peter's Hospital for stone during the four years 1935–38, compared with two general surgical series described by C. J. M. Dawkins, 3,229 cases during 1921–25 and 3,097 cases during 1931–35.

The outstanding points of this comparison show: (1) That fatal chest complications are lowest in the St. Peter's series. (2) That the incidence of fatal pulmonary embolism in the St. Peter's series is lower than in the general surgical

TABLE I

CAUSE OF DEATH

	Pulmonary	Pulmonary embolus	Other causes	TOTAL	Death on table
	Cases	Cases	Cases	Cases	Cases
C. J. M. Dawkins ...	28	17	209	254	13
1921–25	0.87%	0.53%	6.47%	7.87%	0.40%
C. J. M. Dawkins ...	24	4	124	152	8
1931–35	0.78%	0.13%	4.00%	4.91%	0.25%
St. Peter's	12	12	100	124	3
1935–38	0.39%	0.39%	3.29%	4.09%	0.09%

3,229 cases: C. J. M. Dawkins, 1921–25.
3,097 cases: C. J. M. Dawkins, 1931–35.
3,035 cases: St. Peter's, 1935–37.

series of 1921–25 and higher than in the series of 1931–35. (3) That the total mortality is lowest in the St. Peter's series and, (4) That deaths under anæsthesia are lowest in the St. Peter's series.

As a point of interest, Sir Francis Shipway, in a personal communication, has informed me that there have been only three deaths during anæsthesia at St. Peter's in the past 20 years, 1919–1939. They all occurred in 1936 and are included in this series.

These figures amply justify the conservative anæsthetic outlook adopted, and emphasise the correctness of such a policy.

Genito-urinary cases which require an anæsthetic fall naturally into two groups: (1) A group in which diagnostic investigation is the primary object and (2) A group in which it is proposed to carry out a specific routine of surgical interference to relieve a condition already diagnosed.

In the first group, while anæsthesia must be sufficient to carry out cystoscopic manipulations without trauma, it is at the same time essential that anæsthesia must be produced with a minimal interference of the secretory activities of the kidneys.

In women, cystoscopy can always be performed without

anæsthesia, and in hospital out-patients cystoscopy is invariably performed, in patients of both sexes, without anæsthesia. In both sexes, however, the mentality of a particular patient often makes an anæsthetic necessary.

The surgical necessity of an anæsthetic for cystoscopy usually arises from the irritability of a diseased bladder preventing distension. In addition to the unbearable strangury which may be produced in such a case, bleeding, sufficient to obscure the field of vision, is likely to occur either as the result of trauma during the passage of the cystoscope or due to the distension of the bladder after the instrument has been passed.

The three possible methods of anæsthesia for cystoscopy are local, general, and spinal.

Local anæsthetic agents, such as 5 per cent novocaine, retained for five minutes act sufficiently on the anterior urethra, but the duration of the action is short. In the posterior urethra local anæsthetics are almost useless, for when the solution is introduced into the posterior urethra, it contracts and forces most or all of the solution into the bladder.

Even when effective, the intra-vesical action of local anæsthetics is too transitory to be of any real use. For example, 5 c.c. of a 4 per cent solution of cocaine injected into a cat's bladder and left there for 20 minutes does not abolish the bladder reflexes for a length of time sufficient to do a cystoscopy.

The anæsthetic choice for cystoscopy, therefore, lies between a general and a spinal anæsthetic.

All general anæsthetics diminish the secretion of urine: chloroform most and nitrous oxide least. This occurs in consequence of the diminished fluid intake prior to anæsthesia, of the dominant pharmacological action of anæsthetic drugs—that of depressing tissue activity, and of the fall of blood-pressure and consequent diminution of blood flow through the kidneys which occurs during anæsthesia.

If chloroform is not employed, and if general anæsthesia is light and of short duration, renal function is not appreciably depressed, for if these conditions are fulfilled and the

patient is allowed to recover with ureteric catheters in the ureters, the indigo carmine test is found to be reliable.

Asphyxia is especially to be avoided during cystoscopic examination, for it always produces powerful contractions of the bladder and, particularly if the bladder is diseased, will produce bleeding in consequence of the congestion and/or the muscular contractions of the bladder wall.

If a basal anæsthetic is necessary either by reason of the mentality of the patient, or as an adjuvant to avoid asphyxia in nitrous oxide and oxygen anæsthesia, the most suitable agents in my experience are evipan and avertin.

Evipan anæsthesia can be kept light, and if avertin is washed out of the rectum prior to entering the theatre nitrous oxide and oxygen can then be given without asphyxia and the patient can be relied upon to awake within a few minutes of removing the mask. A small series of cases indicates that during avertin-nitrous-oxide-oxygen anæsthesia, the secretion of indigo carmine is retarded by 1 to 2 minutes.

Thus, if general anæsthesia must be employed for cystoscopy, it must be light and of short duration, and asphyxia must always be absent.

The anæsthetic of choice for cystoscopy at St. Peter's Hospital for stone is a low spinal, for the bladder will be relaxed, asphyxia will not be produced, and if only the sacral plexus is anæsthetised, there will be no fall of blood-pressure and consequently no interference with urinary secretion, because below the level of the second lumbar nerve, anterior nerve roots do not contain vaso-constrictor fibres.

Spinal anæsthesia which involves only the sacral plexus is not accompanied, however, by a complete loss of all sensation arising from cystoscopic examination. The passage of the cystoscope is painless until the proximal part of the posterior urethra is reached, when the patient occasionally has some sensation just as the cystoscope enters the bladder. This sensation is only momentary, and does not usually lead to complaints.

In addition to this, patients are conscious of the over-distension of the bladder which occurs with small volumes of lotion when there is extensive disease. This takes the

form of an ill-defined pain or severe discomfort which is not interpreted as an over-distended bladder nor yet as strangury, and which, moreover, disappears immediately intravesical pressure is reduced.

This sensation is of advantage to the surgeon since it prevents over-distension which may result in bleeding.

These sensations can be abolished if anæsthesia is carried to the level of the eleventh thoracic nerve, but since this causes a fall of blood-pressure, it is more usual to produce an amnesic state by the injection of scopolamine 1/150 and omnopon gr. 1/3 given one hour before lumbar puncture.

Evipan, if preceded by scopolamine and omnopon, can sometimes be satisfactorily employed when the cystoscopic examination is undertaken merely to confirm a diagnosis already made, while pentothal is contra-indicated since we believe that it produces powerful contractions of the bladder.

The second group of genito-urinary cases consists of those in whom it is proposed to carry out a specific routine of surgical procedure to relieve a genito-urinary condition already diagnosed.

In contra-distinction to the previous group, in this group the secretory activities of the kidneys can be temporarily ignored during operation, provided that any interference with renal function is as transitory as possible in order that post-operative treatment, more particularly fluid intake, may commence as soon as possible after leaving the theatre.

The use of basal anæsthetics in this group of genito-urinary cases is frequently questioned, not only on the grounds of safety but also because of the delayed recovery which is commonly held to be a necessary accompaniment of this form of anæsthesia.

Since its introduction in 1928 avertin has been administered to 1,011 cases at St. Peter's, and during this ten years about one prostatectomy in every five has had avertin.

In my own practice, Table II shows that about two prostatectomies in every three have had avertin. The mortality amongst prostatectomies who had avertin was 6.89 per cent, those in whom no basal anæsthetic was employed was 12.28 per cent, and the mortality of the whole series of 173 prostatectomies was 8.67 per cent.

TABLE II

DETAILS OF 1,039 CASES, 1933–1938

	PROSTATECTOMIES			ALL CASES		
	Avertin	No basal anæsthetic	Total	Avertin	No basal anæsthetic	Total
Number ...	116	57	173	632	407	1039
Deaths ...	8	7	15	13	12	25
Mortality ...	6.89%	12.28%	8.67%	2.05%	2.94%	2.40%

When all types of cases are considered, those who had avertin show a larger mortality rate than both those in whom no basal anæsthetic was employed and those in the whole series.

These figures are intended to convey nothing more than the fact that the use of avertin is a safe procedure in genito-urinary surgery.

If, after judging the dose of avertin accurately to the particular patient, the avertin is drained out of the rectum prior to entering the theatre, the recovery rate will be as rapid as one is compelled to achieve in nose and throat surgery—that is, a cough reflex before leaving the theatre.

Thus, the use of avertin as a basal anæsthetic prior to general anæsthesia, and with it can be coupled evipan, neither increases the danger nor delays the recovery period if meticulous attention is paid to detail, and moreover, such basal anæsthesia can be employed with advantage, in view of the fact that many genito-urinary patients will have a second and perhaps even a third operation.

When spinal anæsthesia is employed it is our custom to premedicate with scopolamine and omnopon.

The anæsthetic of choice for each specific patient in this second group of cases is selected by compromising between the anæsthetic requirements of the proposed surgical procedure, on the one hand, and on the other, the clinical condition of the patient, who more often than not is a bad surgical risk.

When the patient is a grave surgical risk, his clinical condition dominates all other factors and local anæsthesia is used. It is not so much the anæsthetic of choice as the anæsthetic of necessity. In all other cases, the choice rests between general and spinal anæsthesia, and if the surgical risk is a good one, the inclination of the surgeon and/or the anæsthetist may be allowed to determine which shall be employed. When the surgical risk is a bad one, however, there are clear indications as to when spinal anæsthesia should not be used and which general anæsthetic is the best compromise in such difficult circumstances.

TABLE III

DETAILS OF 124 DEATHS IN 3,035 CASES

St. Peter's Hospital for Stone, 1935–37.

Cause of death	Number of deaths	Average age, years	Percentage of deaths	Percentage operations
Surgical	79	56	63.70	2.62
Cardiac	18	70	14.52	0.59
Pulmonary	12	69	9.68	0.39
Vascular	15	69	12.09	0.49
TOTAL	124	66	99.99	4.09

TABLE IV

DETAILS OF 79 SURGICAL DEATHS, AVERAGE AGE 56 YEARS

Pyelonephritis	22
Uræmia	26
Pelvic cellulitis	7
Peritonitis	7
Ileus	7
Septicæmia	3
Ulcerative colitis	3
Miscellaneous	4
TOTAL CASES	79

Table III shows details of the 124 deaths which occurred in the St. Peter's Hospital series, and it is seen that deaths fall naturally into four groups. The surgical group, whose average age is 56 years, consists of 79 cases. This group is responsible for 63.70 per cent of the total deaths, and the cause of death as shown in Table IV is clearly of a surgical nature and consequently does not concern us in this discussion.

The three remaining groups—the cardiac, the pulmonary and the vascular—represent those fatal cases in whom a correct choice of anæsthesia may save a life and in whom an incorrect choice will certainly reduce the possibility of recovery. These three groups together are responsible for 45 deaths, 36.30 per cent of the total deaths in this series.

The 24 cases shown in Table V consist of 12 cardiac deaths and 3 vascular deaths, in whom death occurred within three days of operation, and 9 pulmonary deaths whose symptoms appeared within three days of operation. For the purpose of discussion these 24 deaths are held to have been caused directly by the surgical interference and/or the anæsthetic.

By reason of their clinical condition and their age, which in this series is 69 years, many of these patients are either dyspnoeic at rest or approach so near to their dyspnoeic point at rest that a very small exertion produces dyspnœa. In such subjects heart failure readily occurs, for when the dyspnoeic point is reached it is the circulatory system and not the pulmonary system which fails to effect further compensation. The decompensation of the heart, with its attendant stagnant anoxia, initiates a vicious circle which often results in fatal cardiac failure. In such subjects a too high spinal anæsthesia will produce cardiac decompensation which is manifest clinically sometimes as fibrillation and sometimes as pulmonary œdema.

Since blood-pressure varies as the product of cardiac output and peripheral resistance, it follows that the field of peripheral resistance eliminated in spinal anæsthesia by the paralysis of vaso-constrictor fibres in anterior nerve roots, can be compensated for only by an increased cardiac output. Hence a too high spinal anæsthesia in a patient with a feeble

TABLE V.

DETAILS OF 24 DEATHS
WHOSE SYMPTOMS COMMENCED WITHIN THREE DAYS OF OPERATION

Average age 69 years

GROUP	AGE	PRE-OPERATIVE CONDITION	COMMENTS	DEATH WITHIN
Cardiac group 12 cases Average age 72 years	(1) aet 71	Heart− Lungs+	Spinal; œdema of lungs	3 days
	(2) aet 73	Heart− Lungs+	Spinal; post-op. fibrillation	3 days
	(3) aet 82	Heart+ Lungs+	Anoxia during spinal; post-op. fibrillation	3 days
	(4) aet 72	Heart− Lungs+	Post-op. fibrillation	3 days
	(5) aet 75	Heart− Lungs−	Post-op. fibrillation	3 days
	(6) aet 77	Heart− Lungs+	Post-op. fibrillation	3 days
	(7) aet 68	Heart− Lungs+	Post-op. fibrillation	3 days
	(8) aet 70	Heart+ Lungs+	Post-op. hæmorrhage	3 days
	(9) aet 64	Heart+ Lungs+	Post-op. hæmorrhage	3 days
	(10) aet 67	Heart− Lungs+	Post-op. hæmorrhage	3 days
	(11) aet 66	Heart− Lungs+	Moribund; C.E. mixture	3 days
	(12) aet 77	Heart+ Lungs+	Sudden cardiac failure	3 days
				ONSET WITHIN
Pulmonary group 9 cases Average age 66 years	(13) aet 61	Heart+ Lungs−	Spinal; post-op. hæmorrhage	3 days
	(14) aet 66	Heart− Lungs−	Fibrillation prior to operation	3 days
	(15) aet 83	Heart− Lungs−	Local; copious pre-op. hæmorrhage	3 days
	(16) aet 86	Heart− Lungs−	Local; post-operative fibrillation	3 days
	(17) aet 53	Heart− Lungs+	Blood-urea 98; atelectasis	3 days
	(18) aet 55	Heart− Lungs+	Blood-urea 140; atelectasis	3 days
	(19) aet 64	Heart+ Lungs−	Open ether	3 days
	(20) aet 70	Heart+ Lungs−	Died while coughing	3 days
	(21) aet 60	Heart+ Lungs−	Spinal; broncho-pneumonia	3 days
				DEATH WITHIN
Vascular group 3 cases	(22) aet 66	Heart+ Lungs−	Pulmonary embolism	3 days
	(23) aet 73	Heart− Lungs−	Coronary thrombosis	3 days
	(24) aet 57	Heart− Lungs−	Cerebral thrombosis	3 days

(Abnormality detected −)
(No abnormality detected +)

heart will almost certainly be followed by cardiac decompensation. The pulmonary œdema of Case 1 and the fibrillation of Cases 2 and 3 are due to this sequence of events, reinforced in Case 3 by anoxia during anæsthesia.

Cases 4, 5, 6, and 7 typify four subjects, who were so near to their dyspnoic point at rest that the trauma of surgical interference and/or the anæsthetic produced cardiac decompensation.

Cases 8, 9, and 10 had more cardiac reserve to draw upon than the above four cases, but an additional factor, a reduction in the oxygen carrying capacity of the blood which followed a post-operative hæmorrhage, was sufficient to produce cardiac decompensation.

In Case 11, a very toxic subject, chloroform for obvious reasons precipitated fatal cardiac failure, while Case 12 died suddenly; a post-mortem examination was refused, and this death would appear to have been due to embolus or thrombosis.

In Case 13, a spinal anæsthetic followed by a post-operative hæmorrhage produced cardiac embarrassment, and Cases 14, 15 and 16 had irregular hearts prior to operation. In each of these four cases the cause of death was broncho-pneumonia, but the sequence of events leading up to these pulmonary deaths is so similar to those of the cardiac deaths that one wonders what factor determined that these four cases should die of broncho-pneumonia rather than of cardiac failure, and the answer appears to lie in the fact that in each instance the lungs were already involved. The remaining five pulmonary deaths are purely anæsthetic deaths. Since medical opinion of the cause of atelectasis is not yet sufficiently crystallised, no comment can be made about Cases 17 and 18 except to point out that both were relatively young, both had bad hearts and a high blood-urea prior to operation, and in each instance the anæsthetic technique employed was such that the tissue nitrogen content of the body fell progressively during anæsthesia.

Cases 19, 20 and 21 had bad chests prior to operation.

Cases 22, 23 and 24 belong to the vascular group, and in the absence of consolidated medical opinion can be attri-

buted to a sluggish circulation, to possible thrombi from the site of operation, and to other unknown factors.

This brief survey of the cases in which death may be attributed directly to all the circumstances connected with surgical interference bring to light a number of relevant facts. It appears to me that the most important single factor responsible for both fatal cardiac and pulmonary complications is the stagnant anoxia which follows cardiac decompensation. This may be precipitated by the indiscreet use of spinal anæsthesia, and in this respect the unilateral technique described by Dr. Rink and myself is of value, since it reduces approximately by half the field of peripheral resistance paralysed. Anæsthetic agents which depress the cardio-vascular system, such as chloroform, and any factor such as the accidental asphyxia which follows an inefficient airway or the premeditated asphyxia which accompanies the secondary saturation of McKesson, will be likely to precipitate cardiac decompensation.

The remaining 21 deaths shown in Table VI consist of 6 cardiac, 3 pulmonary, and 12 vascular cases whose symptoms commenced more than four days after operation. In view of this fact, death cannot be attributed directly to the trauma of the surgical interference and/or the anæsthetic. This trauma is, however, a contributing factor which diminishes the patient's reserves so that a severe surgical convalescence in the very aged (Cases 1, 2, 3, 7 and 8) or a surgical accident in convalescence (Cases 4, 5, 6 and 9), produced cardiac decompensation with its attendant stagnant anoxia, initiating fatal cardiac failure in Cases 1 to 6 and fatal broncho-pneumonia in Cases 7, 8 and 9.

The remaining 12 vascular deaths consist of one fatal coronary thrombosis, which occurred on the sixth day, and 11 cases of pulmonary embolism which occurred not earlier than the seventh day and as late as the twenty-fourth day, the average time of fatal onset being eleven days after operation. These deaths can be attributed, in part at least, to a sluggish circulation, to possible thrombi from the operation site, to posture and other factors connected with the character and severity of the surgical convalescence.

Although our knowledge of the causation of such vascular

TABLE VI.

DETAILS OF 21 DEATHS WHOSE SYMPTOMS COMMENCED MORE THAN FOUR DAYS AFTER OPERATION.

Average age 70.5 years

GROUP	AGE	PRE-OPERATIVE CONDITION	PRE-DISPOSING CAUSE OF DEATH	ONSET OF SYMPTOMS
Cardiac group 6 cases Average age 71 years	(1) aet 70	Heart– Lungs–	Blood urea 192; pre-op. fibrillation	After 9 days
	(2) aet 80	Heart– Lungs–	Fibrillation; restless dyspnoea	After 10 days
	(3) aet 80	Heart+ Lungs+	Fibrillation	After 12 days
	(4) aet 75	Heart+ Lungs+	Ileus; fibrillation	After 4 days
	(5) aet 75	Heart– Lungs+	Ileus; fibrillation	After 5 days
	(6) aet 60	Heart+ Lungs+	Ileus; fibrillation	After 7 days
Pulmonary group 3 cases Average age 75 years	(7) aet 88	Heart– Lungs–	Local; pre-op. fibrillation	After 5 days
	(8) aet 70	Heart– Lungs+	Post-op. fibrillation	After 9 days
	(9) aet 66	Heart+ Lungs–	Spinal; severe secondary hæmorrhage on 3rd day	After 6 days
Vascular group 12 cases	Average age 69 years	1 Coronary thrombosis 11 Pulmonary emboli	None observed	After average of 11 days

(Abnormality detected –)
(No abnormality detected +)

lesions in convalescence is vague, there is definite information available as to the ways and means of successfully neutralising them, for Shaw and Richards state that re-educational breathing exercises in convalescence reduced the incidence of fatal pulmonary embolus to one-fifth of its previous value, and at Chelsea Hospital for Women, where there were 9 cases of fatal pulmonary embolus in 1936, the incidence of fatal pulmonary embolus, following the appointment of a masseuse, was reduced to zero in 1937 and to four cases in 1938.

With the exception of Cases 4, 5, 6 and 9 there is little doubt that all cases in Table VI would materially benefit from such after-treatment. The increased air entry and increased venous return which follows such after-treatment, especially if coupled with the intelligent use of the oxygen tent, transfusion, etc., would greatly reduce the possibility of stagnant anoxia with its resultant cardiac failure and/or pulmonary complication so fatal to man of this age period.

This analysis leads me to conclude:

1. That anoxia either during operation or during convalescence in cases of this age-period and clinical condition is the anæsthetist's greatest enemy.

2. That while a correct choice of anæsthetic is of great importance, of even greater importance is the method of its administration.

THE DIPLOMA IN ANÆSTHETICS

The last recipients of the Diploma without examination were C. G. Bryan, Geoffrey Kaye, and A. R. Youngman.

The following is the list of successful candidates at the last examination for the Diploma:—

B. J. E. Anson, Harigopal Barat, D. J. T. Brinkworth, J. C. Constable, D. G. Cracknell, James Crawford, F. W. Crook, D. A. A. Davis, M. S. El Hakeen, G. E. Ennis, W. E. F. Evans, S. M. Geffen, R. P. Harbord, J. N. H. Howell, T. B. Kenderdine, D. A. Knight, B. G. B. Lucas, J. J. McEnery, R. R. Macintosh, Lucy G. MacMahon, Audrey Marsden, James Montgomerie, Kathleen O'Donnell, W. E. Owens, H. E. Pooler, Freda B. Pratt, Margaret S. Riddell, Shelagh M. Streatfeild, B. I. Taft, N. G. G. Talbot, S. G. Talwalkar, A. M. Williams, L. J. Wolfson, and R. L. Wynne.

Appointment.

Dr. Freda Pratt has been appointed first assistant in the Nuffield Department of Anæsthetics in the University of Oxford.

CASUAL COMMENTS

The Canadian case of McFall versus the Victoria Hospital and Dr. Turner, decided by the Superior Court, Montreal, will doubtless make history in that country. The practical effect of the decision has already been shown by the fact that those hospitals which were still employing nurse-anæsthetists have given up this practice and now provide qualified medical practitioners in that capacity. The case has had this important bearing on practice, not through having any unusual medical or surgical facts, but solely because the death happened at the hands of a nurse-anæsthetist. The medical facts may be briefly told. The plaintiff in the case was widow of the patient, F. J. McFall, a workman who had suffered an accident necessitating an operation. This was performed at the Victoria Hospital by Dr. Turner, the anæsthetic being given by a nurse-anæsthetist. The patient died on the table, and the plaintiff claimed damages against the hospital and Dr. Turner. It is stated that McFall was not a good subject for a general anæsthetic "because of alcoholic abuse, late hours and abnormal blood-pressure." The cause of death could not be determined post-mortem, i.e., there was no embolism, coronary thrombosis or other determinable lesion to explain the death, but there was excess of fat about the heart. It may be remarked parenthetically, that the type of patient and of anæsthetic employed (gas and oxygen), are just those which are apt to be associated with heart failure if any oxygen want is allowed to arise.

Some of the remarks made by the Court are extremely pertinent, and are calculated to receive warm commendation from anæsthetists. The court found that since the cause of death could not be clearly laid down, it could not be attributed to the nurse in charge of the anæsthetic. Nevertheless they blamed the hospital and operator for allowing the anæsthetic to such a patient to be administered by anyone not medically qualified. Here are some of their findings: "that this fatty accumulation around the heart was to be

feared in the case of McFall even though it was not observed clinically, and that by reason of this suspicion the defendants should have been doubly prudent and given the patient the increased protection of a specialist in anæsthesia. . . . MacFall, having chosen to undergo the operation, it became the obligation of the surgeon, in view of the ever-present dangers of the anæsthetic, and particularly in the case of this patient, to choose, even to insist upon, if need be, a first-class anæsthetist, capable of handling in the best way any complications which might arise during the course of the anæsthetic."

Further they added: "considering that the administration of a general anæsthetic, without which certain operations would be impossible, being a dangerous act, it therefore results that the very fact of proposing for this duty a young nurse . . . who had very little of the medical education of physician, constitutes a fault in itself . . . a nurse has not the required medical preparation to be able to cope with an accident during anæsthesia: the reflexes, the pulse, the breathing, the colour of the patient, these are the signs which would speak in a certain way to a specialist in anæsthesia, and which would, by keeping him constantly informed of the condition of the patient, permit him not only to protect the patient by intervening at a critical moment; but also to foresee and prevent such a critical moment; that which constitutes the value of a medical anæsthetist having a knowledge of physiology, is his ability to perceive quickly a sudden complication which may arise, to act quickly, to do what should be done, and nothing else . . . *the claim of the defendants that during the operation, to guard against and to cope with anæsthetic complications the patient has at the same time, the anæsthetist and the surgeon is not admissible* (the italics are ours); the surgeon cannot, and, should not supervise the anæsthesia, that is not his business, all his attention and his faculties should be concentrated on the operation itself . . . the anæsthetist is, therefore, the only person who watches the patient, actually and completely."

The Court also found that "it is impossible to maintain that MacFall would not have died if, instead of having to be anæsthetised by the nurse, he had had an experienced

medical anæsthetist. It was not proven that the death was caused by the inexperience or the incompetence even of the nurse."

The original complete account of the trial is in French, and we have quoted from a translation. We have reproduced these portions of the Court's pronouncement because they put so clearly what we believe to be the proper judicial attitude towards the relative positions of the surgeon and the anæsthetist at an operation. So far as we are aware no judicial person or body in this country has had, or has seized, a like opportunity for making an equally valuable pronouncement.

We have received notice that the Executive Committee of the Australian Society of Anæsthetists for 1939–40 is as follows:—

President: Dr. G. Thorp (West Australia),

Vice-President: *Dr. H. Hunter* (New South Wales),

Secretary-Treasurer: Dr. G. Kaye (Victoria),

who were recently elected at the meeting in Melbourne. The Society is growing slowly but steadily, and we feel sure that it is doing much to promote the science and art of anæsthetics in Australia as well as the welfare of anæsthetists in that country. At the Australian Medical Congress which is to meet in Perth next year there will be a section of anæsthesia.

Any of our readers who happen to find themselves in London with an hour or two to spare, might do worse than spend it in the room at 34 Devonshire Street, which Mr. Charles King has furnished for their convenience and information. It is astonishing how many objects, books prints, pieces of apparatus etc., of interest to anæsthetists Mr. King has got together in so short a time. Moreover his anæsthetic library must be about as complete as any in the country, and he has at his visitors' disposal a number of contemporary periodicals. Among other books the library contains a copy of Snow's famous work which is now much sought after, partly because so few copies seem to be extant. There are, we believe, three highly prized copies in America, one of which is in possession of Dr. R. M. Waters of Madison,

to whom it was presented by three representatives of anæsthesia in this country who wished to show their appreciation of Dr. Waters' work on anæsthetics, as well as of his kindness to many anæsthetists from England who have visited his famous anæsthetic department of the University of Wisconsin.

The room has several portraits of anæsthetists past and present, and we take the liberty of saying that any of our readers who cared to send his own likeness for addition to the little gallery would receive the gratitude of Mr. King.

If the complexity of anæsthetic apparatus increases much more it looks as though, in the not far distant future, the anæsthetist will require not only a mechanic to work his apparatus but a porter to carry it to the scene of the operation. Recently one of the medical papers produced a picture of a new "portable" anæsthetic apparatus by means of which gas and air, or gas and oxygen can be self-administered. The apparatus is, we have no doubt, excellent and competent fully to achieve all its designer's aims; but what struck us about the description was the use of the word "portable". With its cylinders the affair weighs 49 pounds, and without the cylinders, 30 pounds. Either the average anæsthetist is a much stronger, more active, and a more willingly porterable person than we believe, or else the designer of the apparatus means it ought to have its own porter; only thus can it be truly described as portable.

There is a belief prevalent among many students of science of all kinds, and consequently among anæsthetists too, that the books intended for their instruction should be entirely devoid of padding. These volumes should have the necessary facts and nothing else. There must, consequently, be no attempt at literary attraction, for this entails, of necessity, an occasional departure from the bare statement, and leads to expressions of opinion and of criticism which are deplored by the above-mentioned turn of mind. When the doctrine of bare statement is carried to its logical conclusion it leads to works that are little better than a list or catalogue of symptoms, directions for treatment, contraindications and

so on, and a book it is for some people impossible to read. These persons want a little gilding if they are to swallow the pill of knowledge. We confess to much sympathy with their point of view.

We believe that in medicine, as in other departments of knowledge, good literary presentation makes easier the acqusition of information, and does not obscure but renders clearer the facts which the writer desires to impart. The kind of excellence we admire is that, for example, of Osler's "Textbook of Medicine." No one can read a book of this kind, or to quote an earlier example, Fagge's textbook, without finding that the knowledge which he gains is made easily absorbable by the exquisite choice of words through which it is imparted. Moreover, knowledge gained in this way is better remembered than when it is acquired from some dry series of unadorned statements; and whereas the student studies the latter only because he must he resorts to the former for the pleasure which the reading gives him as well as for the information.

In our own department of practice, anæsthetics, we are not too well served as regards the kind of book which is most to be desired. Hewitt's famous textbook, it is true, owed part of its well earned popularity to the excellent manner in which it was written. He was a man who took endless pains over his writing. Consequently what he produced is easy to read, for it is true that " hard writing makes easy reading," and also it had this great virtue, that it was absolutely trustworthy. No author probably acted more directly on the injunction to " verify your references ".

Since the appearance of Hewitt's classic textbook, however, although there have been many admirable small books on anæsthetics, mostly of great practical value, we know of no important volume which can challenge his, both for the worth of its matter and of its manner. Recently there has come into our hands a little volume which we have never seen noticed in print which has led us to the foregoing somewhat trite observations. This little book is a perfect example of the " list " kind of work, admirable in its facts, but hopelessly unattractive in their presentation. It might be of service when a man wished hastily to inform himself

on some particular point, but no one could sit down to read its pages consecutively. Very likely the author intends it only for use in this referential manner, for he calls it an outline of anæsthesia. Certainly its twenty-six pages contain a large amount of information, but this can only be acquired piece-meal, except by those whose taste is of the kind we indicated at the beginning of this note. And, as these are many we expect the outline will have many admirers. Nor is this to be in any way deprecated, since its directions are in almost every instance admirable. Nevertheless we should hate to be asked to read more than a couple of pages at the same sitting.

INTERNATIONAL CONGRESS OF ANÆSTHETISTS

PHILADELPHIA, OCTOBER 16th to 20th, 1939.

FOR the information of anæsthetists contemplating participation in the above meetings, the following data, provided by Cunard White Star Limited, will be found of value.

It is anticipated that the departure of the new Cunard White Star Liner *Mauretania* from Southampton at noon on Saturday, October 7th, will prove a most convenient sailing, as the arrival at New York would be p.m. on Friday the 13th, leaving the week-end free for visit to New York, including the World's Fair, and ample time to continue the brief journey to Philadelphia.

For those delegates desirous of returning immediately after the termination of the Congress, attention is drawn to the *Mauretania* sailing from New York, October 21st, due at Southampton on the 28th, and London the following day.

Cabin Class return fare in the *Mauretania* is £80. 10*s*., but delegates travelling Tourist Class could take advantage of the special excursion rates applicable at the time, the round trip passage on the *Mauretania* on the excursion basis being £39. 5*s*.

The excursion fares permit of twenty-eight days being spent in America, and further details will be gladly conveyed on application to Cunard White Star Limited, 26 Cockspur Street (Telephone: Whitehall 7890).

Additional homeward sailings are suggested as follows:

Aquitania. October 25th, New York to Southampton.
Franconia. October 27th, New York to Liverpool.
Georgic. October 28th, New York to Southampton and London.

Ausonia. October 27th, Montreal to Plymouth and London.

and similar weekly sailings.

The new ***Mauretania*** is a magnificent vessel of 34,000 tons, the largest ship built in an English shipyard. There are ten decks with accommodation for Cabin, Tourist and Third Class passengers, with twenty-one public rooms, five of which are equipped with the latest system of air conditioning.

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The design of the decorations has been enhanced by the use of rare wood, including choice examples of African Mahogany, Australian Walnut, Queensland Elm, Olive and Ash.

Among the innovations for the Third Class passengers is the provision of space for recreation on the Sports Deck, with a verandah and elevators to give access from the Third Class accommodation.

ABSTRACTS

"The present status of cyclopropane." *Journ. Amer. Med. Assoc.*, March 15, 1939, p. 1064.

As the use of cyclopropane is still increasing among anæsthetists in Great Britain they will welcome a good summary on the pharmacology, physiology, and clinical use of the drug which has been issued by the Council of Pharmacy and Chemistry of the American Medical Association. The report does not bring forward any views or facts which will be new to anæsthetists in this country who use cyclopropane, but it presents them with a useful précis of the laboratory and clinical work which has been done on cyclopropane anæsthesia in the United States.

An interesting point is the demonstration by Seevers that subanæsthetic concentrations of cyclopropane (3 to 5 per cent) if continuously inhaled produce analgesia. Most people lose consciousness if the inhaled gas reaches 6 per cent. Experimentally it is shown that cardiac irregularities are common when cyclopropane is used. This is true, however, as Seevers and Waters point out, of the use of almost every anæsthetic clinically. It is only when excessive doses are used that cardiac behaviour becomes of practical importance. Cyclopropane, so far as treatment is concerned, is shown to be a safe anæsthetic when properly given. As regards respiration it differs from most inhalation anæsthetics in not being at any time of its inspiration a respiratory stimulant. The most notable effect in connexion with the respiratory apparatus is the occasional occurrence of massive atelectasis to which several deaths after operation have been shown to be due. The cause is said to be lack of inert gas within the alveoli to prevent their collapse, and the remedy suggested has been the use of helium, a slowly absorbed inert gas, in association with the cyclopropane.

The use of cyclopropane with the high percentage of oxygen necessary leads, of course, to almost complete absence of nitrogen, the normal inert gas constituent of alveolar content.

"Treatment of headache after spinal anæsthesia." E. V. Schubert in *Schwerz. Nark-Anesthes.*, April 1939, p. 11.

The author discusses the probable causation of headache after spinal injection, and inclines to the view that it is related to cerebro-spinal fluid tension perhaps associated with meningeal inflammation. He believes that the right treatment is indicated by the beneficial effect which has been observed on epileptic subjects when exposed to X-ray therapy. His recommendation is that the skull should be treated by X-rays when severe headache follows anæsthesia, and he claims that he has had in three instances highly gratifying results from this procedure.

In this connexion readers are referred also to *Anæsthesia and Analgesia* (Jan.-Feb., 1939, p. 21) where intraspinal injection of 12 to 16 cubic centimetres of 1 per cent dextrose solution is said to reduce the frequency, intensity, and duration of these hedaches.

Vinesthene Anæsthetic Mixture. F. F. Cartwright, *Brit. Med. Journ.*, March 7, p. 1081.

The author asserts that divinyl ether is safe, efficient, and rapid in action, non-irritant to the lungs, and about of equal toxicity with ethyl ether. The margin between efficient anæsthesia and stoppage of breathing is, however, a narrow one. The mixture of 25 per cent vinesthene and 75 per cent ethyl ether ("vinesthene anæsthetic mixture") having been reported to give good results, the author employed it for six months and concludes that, except for abdominal work, it is uniformly successful. The longest period for which it was used was over two hours, but there were several operations of over one hour. The patients all had atropine beforehand, and some also a basal narcotic.

The open method of induction is advised, and takes about two minutes.

"Syncope of the adrenalin-chloroform type." H. Hermann in *Anesth. et Analges.*, Feb. 1939, p. 14.

The author reviews Levy's work on adrenalin-chloroform syncope and seeks to discover whether chloroform alone can produce the fatal fibrillation or whether this cannot arrive also in association with other bodies of the same chemical series as chloroform. After researches in 1931 with Portes and Jourdan the author, in 1934 and 1935, compiled with Vial a list of as many as fifteen bodies which acted like chloroform in their association with adrenalin. The experiments were all carried out on dogs under the influence of chloral. The individual difference in reaction of these animals was well brought out by the experiment, and also the fact that a dog which survived several repetitions of the same experiment would sometimes at a still later trial under exactly the same conditions succumb to fibrillation. All the fifteen bodies which were capable of producing syncope when associated with adrenalin were saturated carbon substitutes, not necessarily chlorine derivatives of methane and ethane, but also bromine and iodine derivatives of these two carbon compounds. Their boiling-point was always below 78 degrees Centigrade. Individual susceptibility is shown to be of the highest importance, and it would be possible to produce lists of failures or successes without any significance. In order to get reliable statistics a number of animals would have to be sacrificed, which is beyond practical bounds. The attempts hitherto made with bodies outside the series above mentioned—for example, with the trichlor ethyl alcohol—have all given negative results, yet the author states that he would not affirm that only halogen derivatives can be used as substitutes for chloroform to produce the syncope. He believes that his list, long already, is not yet closed. From the practical point of view it is the syncope with ethyl chloride and bromide that are important. They happen, as with chloroform, during light anæsthesia.

"*Clinical experience of various anæsthetics.*" L. Christophe of Liège, in *Anesth. et Analges.*, Feb. 1939, p. 27.

Although there may be no practical lesson for our readers in this article, since the conditions of practice may be very different between those of themselves and those of the author, yet it is interesting to read the conclusions of a foreign worker on several everyday methods. For example he arrives at a most devastating condemnation of spinal methods, and the terrible list of morbidities for which he holds it responsible would never be accepted by anæsthetists here as due to the method, properly employed. His faith is pinned most firmly to ether. His criticisms of nitrous oxide suggest that he has not had experience of the best forms of apparatus, and of cyclopropane he admits an almost complete lack of experience. Indeed his final conclusions are enlightening, for he sums up by saying that the use of gaseous anæsthetics is a great step forward and that good apparatus allowing a closed circuit employment of nitrous oxide ethylene and cyclopropane should be at the disposal of surgeons in every well-equipped clinic. The author is a warm advocate of evipan, preceded by morphine or the like, for major surgery of any kind except in the presence of jaundice or bucco-pharyngeal inflammation.

"*Spinal anæsthesia: Regulation of height with fractional doses.*" J. L. de Courcy in *Archives of Surg.*, vol. 38, No. 2, Feb. 1939, p. 287.

The author lays stress on the advantages which are to be gained by keeping the amount of the anæsthetic drug injected to the lowest possible limits. Originally a follower of Pitkin's method, he gave it up because controllability was not as complete as he wished and post-operative vomiting more frequent than desirable. Also he finds percaine less toxic and more uniform in its action than Pitkin's solution. With colleagues he set about reducing the amount of the drug needed to produce insensibility to pain in a certain area. With the doses which they have now arrived at a high degree of satisfaction is reached. The fall in blood-pressure is

absent, and retching and vomiting are almost abolished. The dose used to produce insensibility for operation anywhere below a line drawn between the two anteroposterior spines of the ilium is 50 milligrams of procaine mixed with 1 cubic centimetre of spinal fluid. This allows for prostatectomy, uterine operations, and those for hernia. For hæmorrhoids 25 milligrams suffice, while 100 milligrams give ten hours' anæsthesia, sufficient for kidney and gall bladder operations. These quantities were much less than those usually recommended for routine spinal anæsthesia. The duration of anæsthesia, De Courcy states, is not affected by the amount of drug injected, but the height is. He believes that spinal anæsthesia along the lines indicated is the best anæsthetic for most operations below the umbilicus.

"Extensive thrombosis after injection of pentothal sodium."
R. T. Payne in *Lancet*, April 8, 1939, p.816.

The patient was a man of 67 years to be operated on for varicose veins. He received 0.5 gr. pentothal sodium in 5 per cent solution injected into the right median basilic. There was no difficulty in entering the vein, and no question of the solution being placed anywhere but inside it. The time taken in injection was 1½ to 2 minutes. The operation lasted two hours, and was done under gas-and-oxygen. Pain started near the site of injection on the second day after operation. Thrombosis extended up and down the arm, reaching the anterior fold of the axilla and radial styloid process. There was no redness of the skin, but the course of the thrombosis was tender. Seventeen days after operation the vein was palpable as a slightly tender cord in the forearm and arm.

CORRESPONDENCE

To the Editor, the British Journal of Anæsthesia.

Sir,—The recent correspondence on the administration of light percaine by the Etherington-Wilson technique raises a very important problem. In two cases mentioned by Brennan, the percaine, although carefully administered, managed to reach the cervical region and paralyse the phrenics. During the past few weeks I have heard of a similar case. The anæsthetist, an experienced man, gave a patient 12 cubic centimetres of percaine and kept him sitting for 35 seconds. In due course the phrenics became paralysed and the patient had to be put into an "iron lung" for two hours. At the end of that time he unfortunately died, due, I suspect, to the fact that he had been inhaling a very high percentage of carbon-dioxide in oxygen during the time that artificial respiration had been carried out. Here, then, are three cases in which the percaine managed to reach the cervical region with unfortunate results. The problem to be solved is how it got there.

It seems to me that there are two possible explanations. First, the percaine may have ascended the canal at an abnormally fast rate. This I find difficult to believe, as in Brennan's cases the patients were only kept sitting for 15 seconds. Further, I am not certain but I believe that at least two cases of phrenic paralysis have occurred with the Howard-Jones technique. If it is so, this explanation would hardly cover both types of case.

The second explanation deals with the relationship between the specific gravities of the percaine solution and the cerebro-spinal fluid. Now, the specific gravity of the percaine is fixed. According to the producers it has a specific gravity of 1.0038 at 15°C. and 1.0036 at body temperature.

The specific gravity of the cerebro-spinal fluid, however, is variable, though it is usually assumed to be, and in most cases is, about 1.007. It was with the idea of getting more accurate information on the subject that I recently investigated the appropriate literature. Books on physiology and neurology I found of little assistance. There are, however, one or two books which deal exclusively with the cerebro-spinal fluid and in one of them (Levinson) there appears a list of the variations in specific gravity of the cerebro-spinal fluid given by thirteen different investigators. The figures range from 1.001 to 1.010. The figure 1.001 can be discounted as it referred to cases of hydrocephalus, but two of the other sets of figures gave the lower limit as below 1.004 for normal persons. It would, therefore, appear that in a small number of cases the percaine solution may be hyperbaric. Whether this fact is of itself significant seems doubtful because on injection in the sitting position it would sink to the caudal end of the canal and would only run to the cephalic end in a diluted form when the Trendelenburg position was adopted. (This technique is used by Vehrs with novocain.) Further investigation of the literature revealed another fact which I must confess was unknown to me and which I think may be of importance in this connection. The cerebro-spinal fluid in the ventricles and the cisterna magna is of lower specific gravity than that of the lumbar region. I have had this fact confirmed by two pathologists and it is due to the greater protein content of the fluid in the lower part of the spinal canal. The only book which gave figures put the specific gravity of the cisternal fluid as 1.002 to 1.004. The cerebro-spinal fluid must therefore be regarded as a column of liquid whose specific gravity gets progressively greater as it gets lower in the spinal canal, and there must be a point in the canal of each individual above which the percaine is unlikely to rise because the cerebro-spinal fluid beyond it is hypobaric. This may explain the fact that Jarman and others have kept a patient sitting for three minutes or longer without getting anæsthesia unduly high. This point would vary in position with the individual and under normal circumstances is probably too high to be reached by the percaine. If, however, the specific

gravity of the cerebro-spinal fluid is abnormally low (say 1.004 or 1.005) then the percaine may reach the hypobaric fluid before the patient is put down from the sitting position. Suppose now that the Trendelenburg position is adopted. The upper part of the column of percaine being in contact with a hypobaric fluid will run towards the head and reach the phrenic nerves. This, I admit, is pure conjecture, and it cannot occur in more than a small percentage of cases or we should hear of more accidents. I do suggest, however, that more information is needed with regard to the specific gravity of the cerebro-spinal fluid. In what percentage of cases, for instance, can one expect to find the specific gravity of the cerebro-spinal fluid abnormally low, and in those cases at what level in the canal is one likely to meet the hypobaric fluid? Also, how rapidly is the percaine likely to rise if the specific gravity of the cerebro-spinal fluid is abnormally high (1.010, or more, as it may be in cases approaching uræmia)? If this theory is correct, one may sooner or later hear of a case in which light percaine has been used to produce unilateral anæsthesia for a chest or kidney operation and in which lowering of the head of the table has produced phrenic paralysis of the opposite side.

It is obvious that these points are only of importance when using light percaine or possibly the so-called isobaric solutions. Any solution whose specific gravity lies within the range of variation of that of the cerebro-spinal fluid must, theoretically at any rate, be sometimes hyperbaric and sometimes hypobaric. It was for this reason that I gave up using the buffered solution of percaine (1: 200) which has a specific gravity of 1.006. I never had any bad results with it, but I felt that at any moment I might get an abnormal patient in whom an abnormal distribution of anæsthesia would be produced. Possibly the anæsthetic department at Oxford might be interested enough to investigate these problems with or without the help of the neurological clinics.

I am, yours faithfully,

J. K. HASLER.

LONDON, N.W.2

CONCERNING DR. H. G. DODD ON ETHER CONVULSIONS.

To the Editor of the British Journal of Anæsthesia.

Sir—What extraordinary statements are made in the article by Dr. Dodd. Here is one: "It is not until 1920 that Buxton is able to write, 'Atropine salts for adults is now practically always employed before ether.'" Even so, Buxton was writing of up-to-date practice in London. I very much doubt if "practically always" would be a correct description to supply the country "as a whole." Apart from "Atropine salts is" and the word "Supply" when he means "apply"' this quotation suggests that the provinces are very much behind the times, a suggestion with which you, my dear editor, may agree, but which as a provincial I naturally resent. Putting aside for the moment these very natural emotional disturbances, what are the facts? In the April number of our valuable journal for 1929 I wrote an article on the "Evaluation of Preliminary Injections", dealing with my practice of the injection of morphia and atropine which had then been in operation for at least 20 years. It would seem on the face of it that in this matter the provinces were some 10 years ahead of London. Dr. Dodd seems unaware of this. I do not know when "ether convulsions" were first described. The earliest reference I have by me is that of Pinson, *Brit. Med. Journ.*, 1927. On this assumption I had been using atropine sulph. gr. 1/60th as a preliminary injection for nearly 20 years before the first case was described. I have been using it ever since and have yet to see my first case of "ether convulsions". In the Journal of July 1936, Hudson records a case of "ether convulsions" in which no ether was given at all. In the light of these two facts it seems to me absurd to suggest as Dr. Dodd does in his summary that: (1) Atropine is, in the great majority of cases, the casual agent of ether convulsions, and (2) That the incidence of ether convulsions corresponds with the adoption of atropine as a pre-medicant, and particularly with the employment of increased dosage.

The facts are: (1) Atropine has been in continuous use for 30 years, generally in the dose of gr. 1/60th, in many thousands of cases and no case of "ether convulsions" has occurred. (2) A well authenticated case of "ether convulsions" occurs when neither atropine nor ether has been used.

Whatever the real explanation of "ether convulsions" may be, the facts demonstrate quite clearly that neither atropine nor ether alone, or in combination is the "casual agent."

I am, sir,

Yours etc.,

E. FALKNER HILL.

REVIEW

"Die Allgemeinbetaubung nach ihrem Lentigen stand." Dr. Richard Goldhabn; pp. 78, a few diagrams; price 5 R.M. (Ferdinand Gukl, Stuttgart.

This textbook of "general anæsthesia as it stands to-day" is on the whole more concerned with theory and principles than with practice. It discusses the nature of narcosis and the physiological effects of various anæsthetics, but it gives no practical directions for the administration of any of them. The bearing of various diseases and abnormal states of the patient on the choice and reaction of an anæsthetic is adequately discussed. The use of cyclopropane is discussed in two lines in which this anæsthetic is said to show promise but to be debarred from practice on account of its cost. A special chapter is devoted to anæsthetics in warfare, and the author plumps for ether.

AUG 5 1939

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